What is claimed is:

1. A method for mitigating multipath and improving received signal-to-noise ratios in a Time Division Multiple Access location network, the method comprising:

a) deploying a plurality of chronologically synchronized positioning-unit devices, positioned at known locations, and transmitting positioning signals in a predetermined Time Division Multiple Access sequence, such that each said positioning-unit device transmits a unique positioning signal in a unique transmission time slot;

b) deploying a position receiver configured with a directionally agile beam antenna;

c) receiving and interpreting said unique positioning signals to determine directionally agile beam antenna circumstance;

d) consecutively steering said directionally agile beam antenna, based on said determined directionally agile beam antenna circumstance, in spatial synchronization with said Time Division Multiple Access positioning-unit device positioning signal transmissions,

such that said directionally agile beam antenna directional gain pattern remains oriented toward the currently transmitting positioning-unit device, or remains oriented toward the origin of the currently received positioning-unit device positioning signal.

2. The method of claim 1, wherein said directionally agile beam antenna circumstance may include determination of one or more input variables selected from the group consisting of positioning-unit device locations, positioning-unit device Time Division Multiple Access transmission sequences, directionally agile beam antenna position, positioning-unit device positioning signal propagation delays, and network time.

3. The method of claim 1, wherein said spatial synchronization may be offset from network time in order to allow for positioning-unit device positioning signal propagation delays.

4. A method for mitigating multipath and improving received signal-to-noise ratios in a Time Division Multiple Access location network, the method comprising:

a) deploying a plurality of chronologically synchronized positioning-unit devices, positioned at known locations, and transmitting positioning signals in a predetermined Time Division Multiple Access sequence, such that each said positioning-unit device transmits a unique positioning signal in a unique transmission time slot;

b) deploying a position receiver configured with a directionally agile beam antenna, and an attitude determination means to provide attitude data for said directionally agile beam antenna;

c) receiving and interpreting said unique positioning signals and said attitude data to determine directionally agile beam antenna circumstance;

d) consecutively steering said directionally agile beam antenna, based on said determined directionally agile beam antenna circumstance, in spatial synchronization with said Time Division Multiple Access positioning-unit device positioning signal transmissions,

such that said directionally agile beam antenna directional gain pattern remains oriented toward the currently transmitting positioning-unit device, or remains oriented toward the origin of the currently received positioning-unit device positioning signal.

5. The method of claim 4, wherein said directionally agile beam antenna circumstance may include determination of one or more input variables selected from the group consisting of positioning-unit device locations, positioning-unit device Time Division Multiple Access transmission sequences, directionally agile beam antenna position, directionally agile beam antenna attitude, positioning-unit device positioning signal propagation delays, and network time.

6. The method of claim 4, wherein said spatial synchronization may be offset from network time in order to allow for positioning-unit device positioning signal propagation delays.

7. A system configured to mitigate multipath and improve received signal-to-noise ratios in a Time Division Multiple Access location network, the system comprising:

a) a plurality of chronologically synchronized positioning-unit devices, positioned at known locations, and configured to transmit positioning signals in a predetermined Time Division Multiple Access sequence, such that each said positioning-unit device transmits a unique positioning signal in a unique transmission time slot;

b) a position receiver configured with a directionally agile beam antenna, configured to consecutively steer a directional gain pattern in a plurality of directions;

c) said position receiver configured to receive and interpret said unique positioning signals to determine directionally agile beam antenna circumstance;

e) said directionally agile beam antenna configured to consecutively steer said directional gain pattern, based on said determined directionally agile beam antenna circumstance, in spatial synchronization with said Time Division Multiple Access positioning-unit device positioning signal transmissions,

such that said directionally agile beam antenna directional gain pattern remains oriented toward the currently transmitting positioning-unit device, or remains oriented toward the origin of the currently received positioning-unit device positioning signal.

8. The system of claim 7, wherein said directionally agile beam antenna circumstance may include determination of one or more input variables selected from the group consisting of positioning-unit device locations, positioning-unit device Time Division Multiple Access transmission sequences, directionally agile beam antenna position, positioning-unit device positioning signal propagation delays, and network time.

9. The system of claim 7, wherein said spatial synchronization may be offset from network time in order to allow for positioning-unit device positioning signal propagation delays.

10. A system configured to mitigate multipath and improve received signal-to-noise ratios in a Time Division Multiple Access location network, the system comprising:

a) a plurality of chronologically synchronized positioning-unit devices, positioned at known locations, and configured to transmit positioning signals in a predetermined Time Division Multiple Access sequence, such that each said positioning-unit device transmits a unique positioning signal in a unique transmission time slot;

b) a position receiver configured with a directionally agile beam antenna, configured to consecutively steer a directional gain pattern in a plurality of directions;

c) an attitude determination means configured to provide attitude data for said directionally agile beam antenna;

d) said position receiver configured to receive and interpret said unique positioning signals and said attitude data to determine directionally agile beam antenna circumstance;

e) said directionally agile beam antenna configured to consecutively steer said directional gain pattern, based on said determined directionally agile beam antenna circumstance, in spatial synchronization with said Time Division Multiple Access positioning-unit device positioning signal transmissions,

such that said directionally agile beam antenna directional gain pattern remains oriented toward the currently transmitting positioning-unit device, or remains oriented toward the origin of the currently received positioning-unit device positioning signal.

11. The system of claim 10, wherein said directionally agile beam antenna circumstance may include determination of one or more input variables selected from the group consisting of positioning-unit device locations, positioning-unit device Time Division Multiple Access transmission sequences, directionally agile beam antenna position, directionally agile beam antenna attitude, positioning-unit device positioning signal propagation delays, and network time.

12. The system of claim 10, wherein said spatial synchronization may be offset from network time in order to allow for positioning-unit device positioning signal propagation delays.